

Claim 15 was rejected as being vague and indefinite.

For the remaining claims, the independent claims 1 and 30 were rejected by the Examiner as being anticipated by the Taylor publication (Anal. Chem: 1992, vol. 64, 1741-1744). The Examiner also rejected some of the dependent claims based on references including U.S. Patent No. 5,763,277 to Zhu.

Claims 1-30 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 09/887,953.

These rejections are respectfully traversed.

Summary of the Response

The specification has been amended to provide reference application no. Claim 15 have been amended to clarify the relationship of multiple fibers and multiple radiation sources. Claims 1 and 30 have been amended to more specifically define the positional relationship of the excitation radiation and the detection zone.

Summary of the Invention

The present invention is directed to detection system and a bio-separation system, in which the incident radiation for the detection is directed at the detection zone axially along the separation medium. Specifically, the excitation radiation is directed in close proximity to the detection zone (e.g., using an excitation fiber at its focal point). (Please see specification, at page 15, lines 17+.) The closer the excitation fiber is to the detection zone, the stronger are the

collected emission signals. (Please see specification at page 17, lines 12+.) None of the cited references, either taken alone or in combination, teach or suggest the present invention.

Traversal of Rejections

Taylor does not disclose a system in which excitation radiation is introduced by an optic fiber having an end in close proximity to the detection zone, e.g., at the focal point. Rather, Taylor discloses a system in which the excitation fiber of about 50 μm o.d. is positioned 5 to 10 mm from the detection zone that is monitored via the 1mm diameter optical fiber placed perpendicular to the capillary wall. (Please see Taylor, at column 2, line 1741, about lines 17 to 27.) Accordingly, the end of the excitation fiber is at a distance from the detection zone at least 100 times the diameter of the excitation fiber, which is clearly not at proximity to the detection zone (i.e., on the order of the focal length).

Independent claims 1 and 30 as amended consequently are not anticipated by Taylor. It follows that all the dependent claims should also be patentable over Taylor.

Zhu does not make up for the deficiencies of Taylor. Zhu is not directed to introducing excitation radiation to the detection zone.

Provisional Double Patenting

Applicant submits that the claims in the present application are directed to incident axial excitation radiation, not axial detection of emitted radiation as in the pending claims in copending application no. 09/887,953. The claims in both copending applications could not be obvious over one another. The Examiner has not provided sufficient basis to support his view that it would have been obvious to one of ordinary skill in the art to incorporate the radiation in certain directions in order to optimize the measurement of the signal, when the present invention is directed to incident radiation, not detection of emitted radiation.

In the event that the Examiner should maintain the provisional double patenting rejection, Applicant added a new claim directed to axial detection of emitted radiation. Such should not be subject to restriction requirements in light of the double patenting rejection.

Conclusion

In view of all the foregoing, Applicant submits that the claims pending in this application are patentable over the references of record and are in condition for allowance. Such action at an early date is earnestly solicited. The Examiner is invited to call the undersigned representative to discuss any outstanding issues that may not have been adequately addressed in this response.

Respectfully submitted,

Dated: September 13, 2002

A handwritten signature in black ink, appearing to read 'Wen Liu', written over a horizontal line.

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